Key mechanisms involved in innate immune responses to microorganisms

There are four key mechanisms that are involved in innate immune responses to microorganisms.

They are each defined below.

Phagocytosis

Cellular internalisation and elimination of foreign matter, microorganisms and apoptotic cells. Professional phagocytes – dendritic cells, macrophages, and neutrophils – perform within this high efficiency.

Intracellular killing

Process of elimination of engulfed bacterial pathogens by phagocytic cells, mainly macrophages and neutrophils, using toxic free radicals and lytic enzymes.

Cell recruitment

Rapid movement of immune cells to the sites of inflammation and infection in response to signalling molecules such as chemokine and cytokine which coordinate cellular interactions.

Antigen presentation

The display of microbial or tumorigenic fragments (antigens) on the surface of antigen-presenting cells via major histocompatibility complex (MHC) proteins to the cells of the adaptive immune system.

In the video on the next page, you will gain a more detailed look at the cell types and receptor molecules which characterise the innate immunity.

This video is presented by Dr Sophie Rutschmann, Reader in Immunology at Imperial College London.